



# Cloud is driving disruptive change

## What a CIO needs to know to embrace this

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In this point of view, he explains why he believes cloud is changing the role of the CIO - and what the future may hold for them.

### **With the advent of cloud computing models, the role of the CIO appears to be changing and quite quickly**

Instead of answering the business needs of the company with a traditional combination of dedicated Infrastructure and associated Application solutions, the CIO is adding to his responsibilities by becoming a broker of services to deliver hybrid solutions.

This means sourcing the right combination of information infrastructure and application as an integrated (cloud) service in order to answer an end-user business needs within their company. This combination may be produced by the Internal IT organisation of the company, or sourced externally, for Users becoming Consumers.

An important consequence of this change in approach is what we call the need for Hybrid Delivery capabilities. This means being able to create an integrated by design Service that is a combination of Information, Infrastructure and Application answering a business need for the company and associate to this service three core attributes of Extensibility, Reliability and Portability.

**Extensibility:** The service should be able, to comprehensively scale up or scale down immediately according to the demand.



**Reliability:** The service should be designed to meet pre-defined and categorized Service Level Agreements defined by the business needs that not only include performance but also include security and availability levels.

**Portability:** The service may be executed in different delivery modes according to its lifecycle state, without the need to modify the service when it transfers from one delivery mode to another. For instance, the service may be developed in a test and development Public Cloud, then be executed securely in production in a Private Cloud on premises, then be transferred to be delivered in a Private Cloud in an externally hosted mode, and why not burst back to a Public Cloud for extra capacity when required.

When considering this shift, the question of Legacy environments is often raised. Can everything move to an integrated by design Cloud Service? And can any kind of Service Level Agreement be granted by default?

The generic answers by default to these questions are, “no”. An in depth analysis of the existing application portfolio of the company should be conducted, which will help to decide which of them are “Core” to the company survival and which are “Context” to the company. When classified, the second category should certainly be electable to a Cloud delivery mode. The first category should be reviewed in depth and given the currently available technology on the market, certainly a small part of them could utilise a cloud delivery model. Some advocate that none of the first category can be moved to a Cloud delivery mode. Our experience would show that if the services was designed as “global public Cloud”, then that could be the case. We have also experience where our customers have migrated to a Private Cloud delivery mode part of their “Core” applications. The case of Centrica is very interesting in this respect, where they moved their smart meter customer relationship operation to a Private Cloud delivery mode, creating an integrated by design combination of Infrastructure, Information and Application with great Service Level Agreements (1).

Alternatively, not conducting an in depth analysis of the existing portfolio – even if a subsequent step by step journey is planned – may hide the greater benefit and return on investment for engaging on a new hybrid delivery mode including Cloud Computing. For instance because ING took into account all the pieces of the puzzle, over a period of time, they are expecting a 30% cost benefit for their IT spend over a 4 year period as they transition to a cloud model, including a Private Cloud delivery mode (2.)

Part of the benefit of a Cloud-Based Delivery model is in the extensibility it offers to a Service. The ability to dynamically size and provision the right amount of components required to execute a business request across the full spectrum of Information, Infrastructure and Applications. This is the case when adjusting them for the demand at the moment when the service is executed, and it is also important when enabling the simulation of the cost of a service when planning to deliver it. Since the percentage of the IT costs that are part of the total cost of the goods sold by enterprises are increasing progressively, the impact of being able to instantaneously size and simulate IT costs when creating an offer to the market becomes a real competitive advantage for many companies. As an example, Digital Planet is an interesting case study. Digital Planet is an Irish Service Provider that has decided to move their Enterprise traditional hosting services to a Cloud based delivery mode. One of the reasons why they decided to move to a Cloud delivery model to fulfil their customer needs, was based understandably on the needs to reduce their delivery costs and increase their agility in the market. On top of this, the move to a Cloud delivery mode with a strong Service catalogue mode allows them to increase their commercial win rate from 45% to 75%, enabling their sales force to size immediately the right scale and prices for their sales offering to their market, responding much faster and more precisely to their customer needs, taking full advantage of the capabilities offered by their HP CloudSystem based delivery model (3).



Moving to a hybrid delivery mode, including Cloud computing (Private or Public) as one of these delivery modes, cannot be achieved safely if particular attention is not paid to Information System Governance. Indeed, large companies have invested heavily in the past decade ensuring through ITIL compliant process that a comprehensive governance is set in place to control their IT in a sustainable way. While introducing a Cloud delivery mode, CIOs will need to care about integrating this new mode in their global governance framework in place, ensuring the control points are maintained.

This means that beyond implementing the core of Cloud computing enabling technologies (and especially the orchestration layer), the global methodology set in place for on boarding and controlling processes should be inclusive of these newly built Cloud services, sourced internally (Private cloud) or externally (Public cloud). This will of course include the security policy, but also data privacy management. Beyond these two areas specific attention should be taken to address managing the change from situations where storage, servers and network were often managed separately with specific policies applied to each domain to a new situation where the same orchestration tool will act on top of the virtualization layer and allow servers, storage and network to be provisioned and managed as a holistic pre integrated entity.

In many cases, including the Cloud computing delivery mode into the global governance process will initiate a new chapter of including Information Management into the global governance process. As described before, a true Cloud service should ideally be the combination of Infrastructure, Application(s) and Information components (structured or non-structured data), a comprehensive set being integrated by design in order to avoid huge integration costs. Despite what we have learnt during the Internet era about how important Information has become, only a few enterprise have really integrated it in their overall governance process. Here also, it needs to provision enough management of change in order for things to be properly executed. All the more so as Cloud computing, the new delivery mode for Users becoming Consumers, places Information at the heart of any Cloud service. It is certainly the first time in the compute history when the iT (meaning in the past essentially Application and Technology) becomes really IT (Information Technology).

**Cloud computing, like most things, works brilliantly in theory but CIOs have to deal with keeping the lights on critical areas that need to be addressed by or for the CIO before cloud adoption.** The different topics of Governance, Information, Management of Change, SLAs, Core and Context analysis have already been tackled in this document. There are however some other areas that should be clearly addressed while transitioning to a hybrid delivery mode including Cloud Services.

**Openness and heterogeneous vendors support is one of the key areas to be looked at.** There is always a “before” in nearly all single large enterprises. A “before” Cloud computing, with existing hardware and software assets. Any sustainable Cloud architecture should be able to integrate physical and logical assets that have been implemented already, in order to avoid heavy write offs. At the same time, while being inclusive of the existing heterogeneous IT landscapes, a true Cloud computing reference architecture and associated technical solutions should not “lock in” any customer on one specific and proprietary solution template. Typically, one important pillar of any sustainable Cloud computing architecture is its ability to operate (simultaneously if possible) with the majority of the virtualization tools available in the market. This is one of the reasons why HP CloudSystem was able to work with VMware, Microsoft and Linux virtualized environment from its early days and is expanding now to Openstack.

The qualification of the openness rate of a Cloud Architecture must also stand the analysis of its end to end orchestration layer. Being able to provision heterogeneous hardware flows is one thing, but the completeness of such a functionality, relies also in its ability to provision and handle a 360° portfolio of applications as well as being able to simply connect these flows with the corporate BSM templates of



the company. HP Cloud Services Automation has been designed to do this from the outset. The recent HP announcement (May 2012) of an Openstack based generic IAAS controller crossing all delivery modes, coupled with a common Management Secure layer crossing all delivery modes and an Information Management layer crossing all delivery modes, reflects how important it is for HP to respect Customer's choice and existing installed base whilst enabling the transition to Cloud delivery modes (Public, Private, Hosted Private).

**CIOs should take advantage of Integrated by design Cloud related solutions.** As we discussed previously, the move to Cloud computing means bringing together in the Cloud Service, Infrastructure, Application and Information. This Cloud Service should be executable in different delivery modes, Public, Private and Hybrid. In order that comprehensive Service Catalogues can be initiated, and Cloud services be invoked by users becoming consumers, a lot of integration costs and capabilities may be required. The key point here is not about having the best virtualization tool, or the best orchestration tool, or the best infrastructure and so on but about having a comprehensive built by design pre integration of all components to bring the dream to practice. A strong architecture is required to cope with the challenge. An example of the integrated by design requirement is HP CloudSystem. HP CloudSystem delivers against all the required layers and enhances each of the components at every level. Just take for instance the latest version of VMware Cloud V Director. Because HP CloudSystem is not only virtualization related, or Orchestration related, or Infrastructure management related, but all three of them, it was possible to dramatically integrate by design the new VMware auto flexing functions, enabling to add automatically a cloud host in 15 minutes instead of 4 hours! Same thing happens at the application level. Moving to a Cloud delivery mode enables the provision of applications very quickly, leveraging all the architectural layers. HP Cloud Maps have been designed for this purpose.

A real endorsement of HP's CloudSystem can be found in the Independent Software Vendors (ISV's) ecosystem. HP has been working with many ISV's to create a Cloud Map catalogue for more than 200 applications to-date and growing on a daily basis. These pre designed and automated Cloud Map enable customers that use them to save as much as 200 hours man work by automatically deploying an application. Today we have experienced more than 10 000 downloads of these free of charge Cloud Maps by customers. This demonstrates how closely HP is working with ISV's to grow the capability and market for Cloud applications.

This Integration by design concept covers many others areas. Another important example remains the capability to accommodate both virtual and physical environments. The move to Cloud is a journey that will be made step by step. Although many workloads have been migrated to virtual environments, there are still many of them that are still executed on physical servers. So, being able to manage the physical and virtual seamlessly together is really important.

In conclusion Integration by design is essential to the success of a Cloud project. Moving to a Cloud delivery mode is perceived as a change in the company, and, as any change, will be looked at very carefully by all stakeholders. The adoption rate will depend on the CIO's team ability to drive projects on time and on budget. The success we have experienced implementing more than 850 Private Clouds as of today has been due to the fact we were able to simplify implementation tasks, deliver on promises, and free up a lot of time for our customers so that they can really concentrate the time they spend on the most important thing : building with their business line the right Service Catalogue, the true heart of a Cloud project, on one side, and, on the other side, building their Services brokerage enablement.

**Creating the right Service Brokerage enablement inside the IT organization is an important shift.** This means re considering the way a CIO will answer a business need in his company. Do I build the capability inside IT? If yes, in which delivery mode? Do I source comprehensively outside the company part of - or all - the capability to meet the request? How do I keep this into my Governance model? How do I identify on the market the potential external Cloud Services which I could aggregate to



answer the business need ? Getting the IT organization move to this expertise level is a new project itself. This is about transformation of the team capabilities and knowledge transfer.

An interesting example of an HP customer which has entered this specific journey is Swisscom IT Services (SITS) (4). Working with HP Technology Consulting, Swisscom IT Services have designed their new global IT framework for their 5 year 2010/2015 cloud transformation encompassing IT platforms and business models. The new reference architecture that they have developed to support new business model include : a) Implementation of an hybrid delivery integration layer to enable service brokerage and mobility across platforms and suppliers b) The Introduction of new cloud platform and streamline infrastructure with automation, orchestration and virtualization technologies c) The reduction of the

number of technical delivery platforms d) The creation of a single integrated technical governance model which covers both SITS and third-party services. SITS began transferring its divisions from cost centres into service-oriented P&L operations at the start of 2012. Its plans include business processes that build in continuous improvement with tools and practices to measure and correct course in real time.

**We estimate that building the right Service Catalogue accounts for 80% of a Cloud Computing project success.** This can be watched from different perspectives. The first axis is to design the right services for the right business needs, discussing extensively with the Lines of Business. It is no use building a huge and complex Service Catalogue when starting the journey. Efficiency, coherence and short term pay back should be the main attributes. One interesting example in this respect is how McKesson, the Healthcare Technology Solution Provider has dramatically increased the speed of their development of new applications, defining the right service catalogue for their 3000 developers. Since they are now able to provision in less than 40 minutes versus previously 7 days a comprehensive development environment (combining Infrastructure and Applications), they have dramatically increased their productivity. Mastering the Service Catalogue is by itself a journey. The end state target should be a business oriented service catalogue and it may take time to the organization to get there. Meanwhile, at the Infrastructure + Application level at least it is important a solid foundation is built early stage.

**Invest enough in Management of Change.** The journey to Hybrid delivery including Cloud computing needs to get the organization to evolve in many circumstances. At IT production level, the shift to solutions integrated by design will break the traditional silos, and some different skills will be required than in the past. The IT management level will be also impacted by new capabilities introduced with orchestration capabilities. Application development will certainly shift to Services development. Security design and operation will affect more and more the application level and will have to be handled through an end to end Risk Management perspective. This will impact the people, their roles and their competencies as much as the IT process and governance. As of today, successful Cloud computing projects are the ones who have included 25% of their budget in Management of Change.

**Create the right Metrics for measuring success.** Entering this transformation to Hybrid delivery including Cloud Services requires the right expectation is shared internally in the CIO's team but also externally with the Company's business leaders. DreamWorks needed to Increase their speed to market for animated films and accelerate revenue growth. They decided to migrate part of their film rendering applications to an HP ECS-compute private cloud as part of process efficiency and data centre transformation. What they wanted to achieve, as the DreamWorks management team, was to cut by 50% minimum the time to create an animated film end to end. Moving to this hybrid delivery mode, including adding the HP Cloud capacity to their flow, allowed them to reduce their costs by 30% by 2012, while ensuring availability to all capacity, and get 60% greater rendering throughput.



On their side, ING have been very clear also on their targets to reduce by 30% their global IT costs while shifting to OPEX based IT. Centrica had also set clear expectation as a team. The move to automated Smart Metering had as a consequence that they transitioned to one consumption metering every 30 minutes instead of the traditional three consumption metering per year. Hence a huge new

flow of information to handle. They decided to move to a hybrid delivery model including cloud computing in order that, despite they would have to face a 20% annual increase of their IT needs, they keep their IT costs identical.

Some organizations have already embraced the Cloud computing delivery model for another goal: **Create and generate new businesses**. This is another step, beyond reducing costs or increasing agility. This is all about using 100% of Cloud services brokerage capabilities, aggregate cloud services, create a new value through collaboration. What one company or organization alone cannot simply achieve because of the scale of a project and associated required compute capabilities and costs, they can achieve their goal using a Cloud computing auto scaling platform. In that respect, the metrics become really different.

GS1, a Canadian organization specialized in Supply chain management, has moved to Cloud with a specific quantitative objective in mind : create a new service directed to food manufacturers on the planet in order that any tainted product can be recalled in less than one day instead of 42 days, hence avoiding thousands of death and saving Millions of dollars. GS1 has built a comprehensive global Cloud service to meet this goal. "In 2010, approximately 3,000 people died in the USA from eating contaminated food," explains John Keogh, global director – product and consumer safety, GS1 Global Office. "With around 48 million cases of food borne illnesses and 150,000 hospital admissions per year and an annual cost in excess of \$100 billion for food-borne illnesses, the industry faced a significant challenge; how to enhance traceability and improve product recall efficiency whilst satisfying regulatory requirements." Investigations by AMR Research Inc., part of Gartner Research, indicated the scale of the problem within the North American food industry. It found the average time to sense and act on a recall, involving serious illness or death after consuming a tainted product, was 18 days. Moreover, following a recall notification, it took a further 42 days on average to complete the recall. "Sixty days represents a long time for a company to endure risk," continues Keogh. "More worryingly, after that period, the research found manufacturers could only trace, not locate, 43 per cent of the recalled products. It also indicated serious financial implications. The stock value of companies, without effective recall processes, could fall by two per cent within 24 to 48 hours after a recall, and this fall occasionally increased to 20 per cent within 14 days. With consumer safety as their primary concern followed by financial risk, brand-owners and retailers decided to work together to resolve the serious issues posed by a predominantly non-standardised and outdated manual recall process."

In another area, some have raised the question to save at least 5% of the 75 Billion worldwide drug counterfeit business. This is the initial target that Pharmaceutical companies, Telecommunication Companies, Governments and HP have set for the mPedigree project started in 2010 with the first view of dropping down the huge figure of 700 000 deaths each year due to fake medications. As a result, a comprehensive Cloud-based authentication as a service product has been developed and launched, combining highly secure automatic code generation, Real-time customer messaging and Real-time analytics. The success of the first implementation in real life in Ghana has been the starting point for new development and a wider initiative led by HP to tackle the largest worldwide Counterfeiting industry which accounts for 600 Billion a year of the world trade. The HP Global Product Authentication Service aims at this goal through a Cloud Based customer protection solution which can be used by most enterprises on the planet.

The last example I would like to quote to end this new category of Cloud technology based initiatives is the education domain. Many projects have been set up in this area. Some of them had great success in enabling significant increases of educated population while reducing heavily the associated compute



costs, syndicating cross a country through Cloud based services the compute capacities, the content aggregation and enabling students' interactivity. Some others, like the HP Life (6) one go beyond educational targets and directly aim at reducing the unemployment rate, enabling entrepreneurs to be more successful through specific international Cloud based education programs and community sharing processes. Direct outcome of HP Life for the past 18 months has been 43 000 new jobs created or employment obtained.

Some of the “what” and some of the “how” have been pointed out in these few pages. **The main question we would have to raise in closing is the “Why”.** Why it is so important for CIOs and their companies to be embrace this new step, to start implementing hybrid delivery models including Cloud services. One of the answers to this question is certainly in thinking about what is coming next, after the Cloud.

The era of Cloud is certainly the third step of an evolution process which started with the Net, (ubiquitous and uniform access to devices) was followed then the Web, (ubiquitous and uniform access to the Information). The Cloud state gives us access to ubiquitous access to Services, creating links and value out of mainly structured information crossing devices. It introduces the time when all enterprises and users may become service providers to the community. Thinking of the state we are now, we grow to an architecture supporting billions of users becoming consumers who access tens of millions of services delivered by millions of service providers built on hundreds of millions of servers containing multi exabytes of data connected by multi terabytes network. This global architecture is able to scale up and down according to the demand. One great abstract of where we stand with this evolution process in the IT is a brain. Is this the ultimate goal? Certainly not. The next coming step in this evolution is to give this brain access to sensations. Seeing, smelling, hearing, touching, tasting. Research Labs have already entered these new areas, when trillions of sensors will feed the brain with non-structured information for building a planet-wide sensing network using tiny, cheap, tough, sensitive detectors. This Central Nervous System for the Earth is on its way and will generate new flows of multiple structured and non-structured information that only a Cloud computing based Information system will be able to handle. Beyond any value Cloud computing based Information systems brings today, this is why it matters for tomorrow.

- (1) Centrica, moving to Cloud, Video, 2012, ([click here](#))
- (2) ING, Moving to Cloud, Video, 2012, ([click here](#))
- (3) Digital Planet, Moving to Cloud, IDC study, 2012, (click [here](#) for case study, [here](#) for video)
- (4) Swisscom IT Services moving to hybrid cloud, 2012, ([click here](#) for case study, [here](#) for video)
- (5) GS1, moving to Cloud, Video & Business case, 2012, (click [here](#) for case study, [here](#) for video)
- (6) HPLife Cloud Services, 2012, ([click here](#))